



ENTERED PCT09

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/890,604

DATE: 03/22/2002
TIME: 11:40:36

Input Set : A:\41193--1.txt
Output Set: N:\CRF3\03222002\I890604.raw

3 <110> APPLICANT: Ellis, David D
 4 Chapple, Clinton C S
 5 Gilbert, Margarita
 7 <120> TITLE OF INVENTION: Modification of Lignin Composition of Gymnosperms
 9 <130> FILE REFERENCE: 41193-B
 11 <140> CURRENT APPLICATION NUMBER: 09/890,604
 C-12 <141> CURRENT FILING DATE: 2002-03-01
 14 <150> PRIOR APPLICATION NUMBER: US 60/118,124
 15 <151> PRIOR FILING DATE: 1999-02-01
 17 <150> PRIOR APPLICATION NUMBER: PCT/CA00/00074
 18 <151> PRIOR FILING DATE: 2000-01-31
 20 <160> NUMBER OF SEQ ID NOS: 2
 22 <170> SOFTWARE: PatentIn version 3.1
 24 <210> SEQ ID NO: 1
 25 <211> LENGTH: 5156
 26 <212> TYPE: DNA
 27 <213> ORGANISM: Arabidopsis thaliana
 29 <220> FEATURE:
 30 <221> NAME/KEY: CDS
 31 <222> LOCATION: (2487)..(3002)
 32 <223> OTHER INFORMATION:
 35 <220> FEATURE:
 36 <221> NAME/KEY: CDS
 37 <222> LOCATION: (3902)..(4519)
 38 <223> OTHER INFORMATION:
 41 <220> FEATURE:
 42 <221> NAME/KEY: CDS
 43 <222> LOCATION: (3131)..(3556)
 44 <223> OTHER INFORMATION:
 47 <400> SEQUENCE: 1
 48 aagcttatgt atttcccttat aaccattttt ttctgtat atggggacag aaacataata 60
 50 agtaacaaat agtggtttt tttttttaaa tataaaaaaa ctgttttaacc attttatttc 120
 52 ttggtagca aaattttgtat atattcttaa gaaactaata ttttaggttg atatattgca 180
 54 gtcactaaat agttttaaaa gacacgaagt tggtaagaac aggcatatat tattcgattt 240
 56 aatttaggaat gcttatgtta atctgattcg actaattaga aacgacgata ctatgagctc 300
 58 atagatggtc ccacgaccca ctctcccat ttagtcaatat tcaactgagc aatgaaacta 360
 60 attaaaaacg tggtagatt aaaaaataa attgtgcagg tagcggatat ataataactag 420
 62 taggggttaa aaataaaata aaacaccaca gtattaaatt tttgtttcaa aagtattatc 480
 64 aatagttttt ttgcttcaaa aatatcacaa atttttgtat gaaatatttc tttaacgaaa 540
 66 ataaaattaaa taaaattaa aatttatatt tggagttcta ttttaattt agagttttt 600
 68 ttgttaccac atttttgtaa ttattctaat attaatttgat gatattatta caaaaagtaa 660
 70 aaatatgata ttttagaata ctattatcgat tatttgat tattgacctt agctttgttt 720
 72 gggggagac atgtgattat cttattacct ttttattccca tgaaactaca gagttcgcca 780

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/890,604

DATE: 03/22/2002
TIME: 11:40:36

Input Set : A:\41193--1.txt
Output Set: N:\CRF3\03222002\I890604.raw

74	ggtaccatac	atgcacacac	cctcgtaaag	ccgtgactta	atatgatcta	gaactaaat	840											
76	agtactacta	attgtgtcat	ttgaactttc	tcctatgtcg	gtttcaacttc	atgtatcgca	900											
78	gaacaggtgg	aatacagtgt	ccttgagttt	cacccaaatc	ggtccaaattt	tgtgatataat	960											
80	attgcgataac	agacatacag	cctacagagt	tttgcgtttag	cccactgggt	ggcaaaccgaa	1020											
82	attgtcttta	ttttttatg	ttttgttgc	aatgtgttctt	tgtttttaaac	tagattgagg	1080											
84	tttaatttta	atacatttgc	tagtttacag	attatgcagt	gtaatctgat	aatgtaaat	1140											
86	gaactgcgtt	ggtcaaagtc	ttgtgttaacg	cactgtatct	aaattgtgag	taacgacaaa	1200											
88	ataattaaaa	ttaaaggacc	ttcaagtattt	attagatctt	ctgtctaaga	tgcacaggtt	1260											
90	ttcagtaata	gtaataaataa	attacttgc	taattaaat	ctaatttagt	aaccttgcgt	1320											
92	ctaaacctaa	atgagcataa	atccaaaagc	aaaaatctaa	acctaactga	aaaagtacatt	1380											
94	acgaaaaaaa	aaaaaaaagaa	agagaaaaaa	ctacctgaaa	agtcatgcac	aacgttcatc	1440											
96	ttggcttaat	ttatttagtt	tattaaat	aaaaatggcg	agtttctgga	gtttgttggaa	1500											
98	aatatatttgc	tttagccact	tttagaatttgc	ttgttttaat	tgttattaaat	gatataatcgaa	1560											
100	gataatgcgt	ttatattcacc	aatatttttgc	ccaaactagt	cctatacagt	cattttcaat	1620											
102	cagctatgtt	caactaatttgc	aaacccactg	aaagtcaatc	atgattcgtc	atatttataat	1680											
104	gctcgaatttgc	agtaaaatcc	gtttggtata	ctatttatttgc	cgtataagta	tgttaattccaa	1740											
106	ctagatttcc	ttaaactaaa	ttatataatttgc	acataattgt	tttctttaaa	agtcatacaac	1800											
108	agttattaaat	ttataggaaa	ttatttgcgtt	tatttttttgc	tttttttagg	aaattatttgc	1860											
110	ttttgcaca	catttgcgtt	ttgcaaaactt	ttaaaaagaaa	ataaaatgatttgc	gttataatttgc	1920											
112	attacatttgc	agtttgcgtt	agatttttttgc	tatctaacc	ttaatgttttgc	tttccctgtt	1980											
114	tttaggaaaa	tcatacccaa	atataatttgc	gatcacagta	aatcacggaa	tagttatgac	2040											
116	caagattttc	aaagtaatac	tttagaatttgc	attaaataaa	cgaaatttttgc	ggaagaaataat	2100											
118	atcaagatttgc	taggaaacga	tttgcgtt	gatttagaag	atttgcgtt	ttaattaaat	2160											
120	attttcatttgc	ctaaataatttgc	aatgcgtt	gcataatatttgc	gtaaataatgt	tcaagtatcat	2220											
122	gattaatttgc	ttaaaatgggt	tgaaaat	atataatgttgc	atttttttcaat	aaggataact	2280											
124	aattatttttgc	atatttcaat	gaaaatataa	gaaatgggttgc	gtacatatat	ggatgaagaa	2340											
126	atthaatgttgc	ataatacataa	aatgtcaaaa	aaagggacca	cacaatttgc	ttataaaacc	2400											
128	tacctctcta	atcacatccc	aaaatggaga	acttgcctc	ctgacaacat	ttcagaaaaat	2460											
130	aatcgaatcc	aaaaaaaaca	ctcaat	atg	gag	tct	ata	tca	caa	aca	cta	2513						
131				Met	Glu	Ser	Ser	Ile	Ser	Gln	Thr	Leu						
132				1				5										
134	agc	aaa	ctt	tca	gat	ccc	acg	acg	tct	ttt	gtc	tct	2561					
135	Ser	Lys	Leu	Ser	Asp	Pro	Thr	Thr	Ser	Leu	Val	Ile	Val	Ser	Leu			
136	10					15			20			25						
138	ttc	atc	ttc	atc	agc	ttc	atc	aca	cg	cg	cg	cg	agg	cct	cca	tat	cct	2609
139	Phe	Ile	Phe	Ile	Ser	Phe	Ile	Thr	Arg	Arg	Arg	Arg	Pro	Pro	Tyr	Pro		
140																		
142	ccc	ggt	cca	cga	ggt	tgg	ccc	atc	ata	ggc	aac	atg	tta	atg	atg	gac	2657	
143	Pro	Gly	Pro	Arg	Gly	Trp	Pro	Ile	Ile	Gly	Asn	Met	Leu	Met	Met	Asp		
144																		
146	caa	ctc	acc	cac	cgt	ggt	tta	gcc	aat	tta	gct	aaa	aag	tat	ggc	gga	2705	
147	Gln	Leu	Thr	His	Arg	Gly	Leu	Ala	Asn	Leu	Ala	Lys	Lys	Tyr	Gly	Gly		
148																		
150	ttg	tgc	cat	ctc	cgc	atg	gga	ttc	ctc	cat	atg	tac	gct	gtc	tca	tca	2753	
151	Leu	Cys	His	Leu	Arg	Met	Gly	Phe	Leu	His	Met	Tyr	Ala	Val	Ser	Ser		
152																		
154	ccc	gag	gtg	gct	cga	caa	gtc	ctt	caa	gtc	caa	gac	agc	gtc	ttc	tcg	2801	
155	Pro	Glu	Val	Ala	Arg	Gln	Val	Leu	Gln	Val	Gln	Asp	Ser	Val	Phe	Ser		
156																		

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/890,604

DATE: 03/22/2002
TIME: 11:40:36

Input Set : A:\41193--1.txt
Output Set: N:\CRF3\03222002\I890604.raw

158 aac	cg	cct	gca	act	ata	gct	ata	agc	tat	ctg	act	ta	c	gac	cg	gc	2849
159 Asn	Arg	Pro	Ala	Thr	Ile	Ala	Ile	Ser	Tyr	Leu	Thr	Tyr	Asp	Arg	Ala		
160				110				115							120		
162 gac	atg	gct	ttc	gct	cac	tac	gga	ccg	ttt	tgg	aga	cag	atg	aga	aaa	2897	
163 Asp	Met	Ala	Phe	Ala	His	Tyr	Gly	Pro	Phe	Trp	Arg	Gln	Met	Arg	Lys		
164				125				130							135		
166 gt	tg	gt	tc	atg	aag	gt	ttt	agc	cgt	aaa	aga	gct	gag	tca	tgg	gt	2945
167 Val	Cys	Val	Met	Lys	Val	Phe	Ser	Arg	Lys	Arg	Ala	Glu	Ser	Trp	Ala		
168				140				145							150		
170 tca	gtt	cgt	gt	gat	gaa	gt	gac	aaa	atg	gt	tc	cg	tc	tct	tgt	aa	2993
171 Ser	Val	Arg	Asp	Glu	Val	Asp	Lys	Met	Val	Arg	Ser	Val	Ser	Cys	Asn		
172				155				160							165		
174 gtt	gg	aag	ctacttcaca	tattcaccac	tcttgctata	tatatgtc	a									3042	
175 Val	Gly	Lys															
176	170																
178 attaaacaaa	tatgtaaaaaa	gtgaaagtac	tcatttcttc	tttcttttagt	atgtacttta											3102	
180 acat	ttttaacc	aaaacaattt	taggttaag	cct	ata	aa	c	gtc	ggg	gag	caa	att				3154	
181																	
182								175							180		
184 ttt	gca	ctg	acc	cgc	aa	at	act	ta	cg	gca	gc	ttt	ggg	tca	gc	3202	
185 Phe	Ala	Leu	Thr	Arg	Asn	Ile	Thr	Tyr	Arg	Ala	Ala	Phe	Gly	Ser	Ala		
186				185				190							195		
188 tgc	gag	aag	gga	caa	gac	gag	ttc	ata	aga	atc	tta	caa	gag	ttc	tct	3250	
189 Cys	Glu	Lys	Gly	Gln	Asp	Glu	Phe	Ile	Arg	Ile	Leu	Gln	Glu	Phe	Ser		
190				200				205							210		
192 aag	ctt	ttt	gga	gcc	ttc	aa	ct	gt	gc	gt	ttc	at	cc	ta	t	3298	
193 Lys	Leu	Phe	Gly	Ala	Phe	Asn	Val	Ala	Asp	Phe	Ile	Pro	Tyr	Phe	Gly		
194				215				220							225		
196 tgg	atc	gat	ccg	caa	ggg	at	aa	ac	aa	cg	ct	gt	aa	gc	cgt	3346	
197 Trp	Ile	Asp	Pro	Gln	Gly	Ile	Asn	Lys	Arg	Leu	Val	Lys	Ala	Arg	Asn		
198				230				235							240		
200 gat	cta	gac	gga	ttt	att	gac	gat	tt	atc	gat	gaa	cat	at	g	aa	3394	
201 Asp	Leu	Asp	Gly	Phe	Ile	Asp	Asp	Ile	Ile	Asp	Glu	His	Met	Lys	Lys		
202	245				250				255						260		
204 aag	gag	aat	caa	aa	c	g	ct	gt	gat	gat	ggg	gat	tt	gt	acc	3442	
205 Lys	Glu	Asn	Gln	Asn	Ala	Val	Asp	Asp	Gly	Asp	Val	Val	Asp	Thr	Asp		
206				265				270							275		
208 atg	gtt	gat	gt	ttt	ctt	gct	ttt	ta	cg	aa	gag	gc	aa	tt	gt	3490	
209 Met	Val	Asp	Asp	Leu	Leu	Ala	Phe	Tyr	Ser	Glu	Glu	Ala	Lys	Leu	Val		
210				280				285							290		
212 agt	gag	aca	gc	g	at	ctt	caa	aa	tcc	atc	aa	ctt	ac	cgt	gac	aa	3538
213 Ser	Glu	Thr	Ala	Asp	Leu	Gln	Asn	Ser	Ile	Lys	Leu	Thr	Arg	Asp	Asn		
214				295				300							305		
216 atc	aaa	gca	atc	atc	atc	at	gt	taatttat	ttcaaaa	aggc	actatgtc	ata				3586	
217 Ile	Lys	Ala	Ile	Ile	Met												
218				310													
220 gtc	atgtttc	ttaatgcgtt	acgtataat	acttatccat	tgaccagtta	ttttctccta										3646	
222 agttttttt	ttt	gat	ttt	ttt	ttt	ttt	ttt	ttt	ttt	ttt	ttt	ttt	ttt	ttt	ttt	3706	
224 tagcatgatc	ttttttt	aat	atata	tagaa	gtt	gata	ttc	ttc	ttc	ttc	ttc	ttc	ttc	ttc	ttc	3766	

RAW SEQUENCE LISTING DATE: 03/22/2002
PATENT APPLICATION: US/09/890,604 TIME: 11:40:36

Input Set : A:\41193--1.txt
Output Set: N:\CRF3\03222002\I890604.raw

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/890,604

DATE: 03/22/2002
TIME: 11:40:36

Input Set : A:\41193~~1.txt
Output Set: N:\CRF3\03222002\I890604.raw

296 attaggggct ggaagttcgc tggtaaggc taaatcagag ttaaagtat aatttacaa 4929
298 gccccacaaa aggtcgcaga taaaaccac atgatattt taaaaaaaaat tctaaggttt 4989
300 ttatttagttt tatttcagt ttactgagta ctatttactt ttttattttt tgcaaataaa 5049
302 tgtattttat catatttatg tttttgtta taaactccaa acatacaggt ttcattacct 5109
304 aaaaaaagac agagtggttt cgtaatttt gtttcattaa tctcgag 5156
307 <210> SEQ ID NO: 2
308 <211> LENGTH: 520
309 <212> TYPE: PRT
310 <213> ORGANISM: Arabidopsis thaliana
312 <400> SEQUENCE: 2
314 Met Glu Ser Ser Ile Ser Gln Thr Leu Ser Lys Leu Ser Asp Pro Thr
315 1 5 10 15
318 Thr Ser Leu Val Ile Val Val Ser Leu Phe Ile Phe Ile Ser Phe Ile
319 20 25 30
322 Thr Arg Arg Arg Arg Pro Pro Tyr Pro Pro Gly Pro Arg Gly Trp Pro
323 35 40 45
326 Ile Ile Gly Asn Met Leu Met Met Asp Gln Leu Thr His Arg Gly Leu
327 50 55 60
330 Ala Asn Leu Ala Lys Lys Tyr Gly Gly Leu Cys His Leu Arg Met Gly
331 65 70 75 80
334 Phe Leu His Met Tyr Ala Val Ser Ser Pro Glu Val Ala Arg Gln Val
335 85 90 95
338 Leu Gln Val Gln Asp Ser Val Phe Ser Asn Arg Pro Ala Thr Ile Ala
339 100 105 110
342 Ile Ser Tyr Leu Thr Tyr Asp Arg Ala Asp Met Ala Phe Ala His Tyr
343 115 120 125
346 Gly Pro Phe Trp Arg Gln Met Arg Lys Val Cys Val Met Lys Val Phe
347 130 135 140
350 Ser Arg Lys Arg Ala Glu Ser Trp Ala Ser Val Arg Asp Glu Val Asp
351 145 150 155 160
354 Lys Met Val Arg Ser Val Ser Cys Asn Val Gly Lys Pro Ile Asn Val
355 165 170 175
358 Gly Glu Gln Ile Phe Ala Leu Thr Arg Asn Ile Thr Tyr Arg Ala Ala
359 180 185 190
362 Phe Gly Ser Ala Cys Glu Lys Gly Gln Asp Glu Phe Ile Arg Ile Leu
363 195 200 205
366 Gln Glu Phe Ser Lys Leu Phe Gly Ala Phe Asn Val Ala Asp Phe Ile
367 210 215 220
370 Pro Tyr Phe Gly Trp Ile Asp Pro Gln Gly Ile Asn Lys Arg Leu Val
371 225 230 235 240
374 Lys Ala Arg Asn Asp Leu Asp Gly Phe Ile Asp Asp Ile Ile Asp Glu
375 245 250 255
378 His Met Lys Lys Glu Asn Gln Asn Ala Val Asp Asp Gly Asp Val
379 260 265 270
382 Val Asp Thr Asp Met Val Asp Asp Leu Leu Ala Phe Tyr Ser Glu Glu
383 275 280 285
386 Ala Lys Leu Val Ser Glu Thr Ala Asp Leu Gln Asn Ser Ile Lys Leu
387 290 295 300
390 Thr Arg Asp Asn Ile Lys Ala Ile Ile Met Asp Val Met Phe Gly Gly

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/890,604

DATE: 03/22/2002
TIME: 11:40:37

Input Set : A:\41193--1.txt
Output Set: N:\CRF3\03222002\I890604.raw

L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date